An accessible and transparent pipeline for publishing historical egodocuments

Alix Chagué, Floriane Chiffoleau

An accessible and transparent pipeline for publishing historical egodocuments

What's Past is Prologue : The NewsEye International Conference
17 March 2021

DAHN Project
Alix Chagué - Floriane Chiffoleau
Research and Development Engineers at Inria

WHY A PIPELINE ?

- Black box:
  - ➢ does everything we want; but no interception of the data, no customization;

- Scattered toolbox:
  - ➢ risk of obsolescence and discontinuity; portability of data not guaranteed;

- Pipeline:
  - ➢ clear steps, compatible softwares, extensive documentation
  - ➢ data integrity, user in control

THE DAHN PROJECT

“Dispositif de soutien à l'Archivistique et aux Humanités Numériques”

- Members: Inria + EHESS + University of Le Mans | MESRI;
- Scientific digital edition program for archival corpus;
- Goal: facilitate the digitization of data extracted from archival collections and their dissemination to the public in the form of digital documents and/or as online editions
- ALMANACH in charge of developing and/or enhancing the tools that are part of the pipeline.

L'ECOLE DES HAUTES ETUDES EN SCIENCES SOCIALES

Inria

Le Mans Université

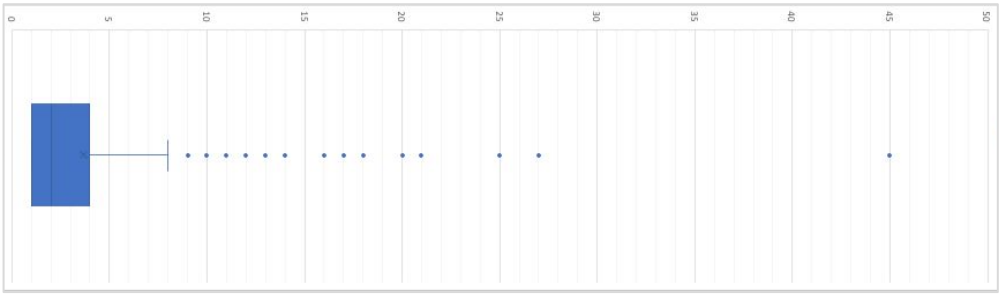
MINISTÈRE DE L'ENSEIGNEMENT SUPÉRIEUR, DE LA RECHERCHE ET DE L'INNOVATION

Liberté
Égalité
Fraternité

THE CORPUS: PAUL D'ESTOURNELLES DE CONSTANT CORRESPONDENCE

- The context:
  - War reports
  - Exchange of opinions between two pacifists
- The corpus, a perfect test subject:
  - Typewritten documents: easier OCR, no HTR, faster work
  - Voluminous corpus: 1500 letters, 430 from the war period alone (from April 15, 1914 to November 19, 1918), one-to-several tens pages

The sender:
Paul d'Estournelles de Constant



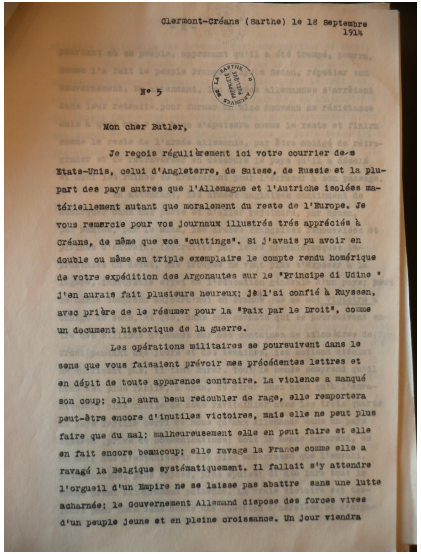
Distribution of pages per letter

The recipient:
Nicholas Murray Butler

THE CORPUS: DIGITIZATION OF THE CORRESPONDENCE

An heterogeneous corpus of digitizations:

- Manual photo shooting of the corpus, by a researcher of the project, prior to its creation: medium quality images, case of blurred lines, cropped images and/or incomplete pages
- Institutional and exhaustive digitization campaign with proper material by the institution where the corpus is kept: high quality images



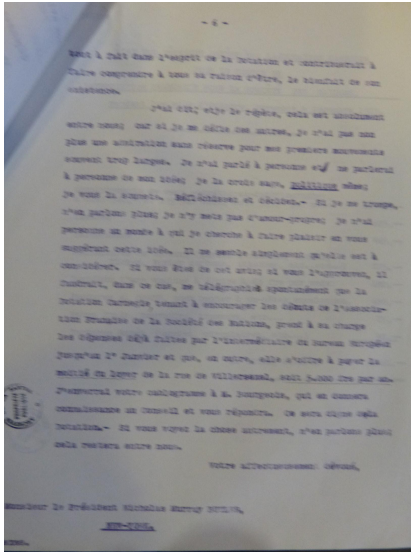
Clermont-Créans (Sarthe) le 18 Septembre 1914

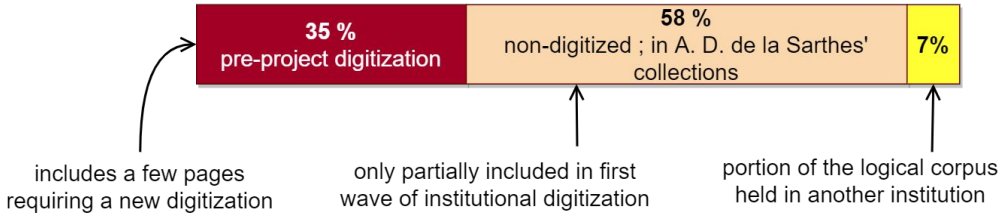
N° 5

Mon cher Butler,

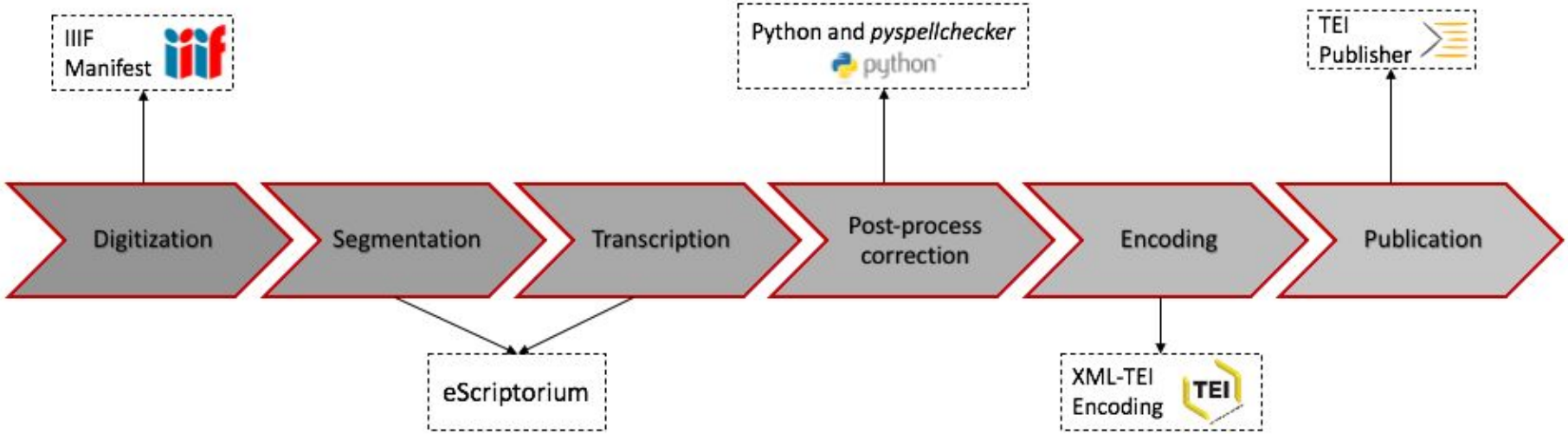
Je reçois régulièrement ici votre courrier des Etats-Unis, celui d'Angleterre, de Suisse, de Russie et la plupart des pays autres que l'Allemagne et l'Autriche isolées matériellement autant que moralement du reste de l'Europe. Je vous remercie pour vos journaux illustrés très appréciés à Créans, de même que vos 'cuttings'. Si j'avais pu avoir en double ou même en triple exemplaire le compte rendu homérique de votre expédition des Argonautes sur le 'Principe di Udine' j'en aurais fait plusieurs heureux; je l'ai confié à Ruyssen, avec prière de le résumer pour la 'Paix par le Droit', comme un document historique de la guerre.

Les opérations militaires se poursuivent dans le sens que vous faisaient prévoir mes précédentes lettres et en dépit de toute apparence contraire. La violence a manqué son coup: elle aura beau redoubler de rage, elle remportera peut-être encore d'inutiles victoires, mais elle ne peut plus faire que du mal; malheureusement elle en peut faire et elle en fait encore beaucoup: elle ravage la France comme elle a ravagé la Belgique systématiquement. Il fallait s'y attendre l'orgueil d'un Empire ne se laisse pas abattre sans une lutte acharnée; le Gouvernement Allemand dispose des forces vives d'un peuple jeune et en pleine croissance. Un jour viendra



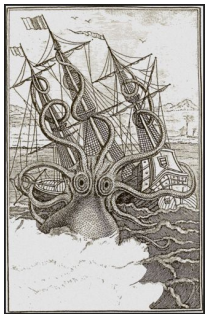


THE PIPELINE

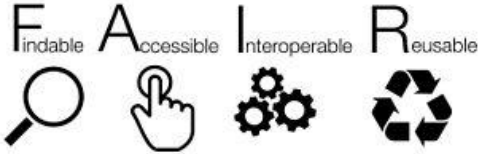


THE OCR ENGINE: A CAPSTONE

- Powered by eScriptorium and Kraken
  - eScriptorium: web interface for collaborative and automatic transcription projects;
  - Historical ties between ALMAnaCH and SCRIPTA PSL (project team behind eScriptorium);
  - Intuitive platform and user-friendly on multiple features;
  - Entirely open-source and up-to-date formats;
- Guiding principles:
  - Every step of the pipeline relies on open-source software or services;
  - Compliance with the FAIR principles.

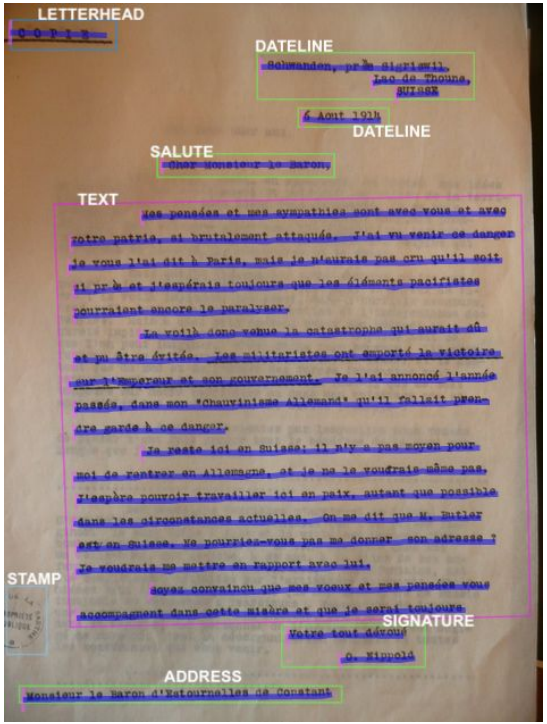


PSL UNIVERSITÉ PARIS | SCRIPTA histoire et pratiques de l'écrit



THE PIPELINE STEP BY STEP: SEGMENTATION

- Segmentation and layout annotation with a system of lines and zones tagging coupled with an ontology;
- Possible to build your own modelization and pass it on to a model;
- Integration of the TEI framework early-on;
- Participation of few members of the DAHN project in SegmOnto, a working group aiming at creating a general TEI-based ontology for HTR projects.

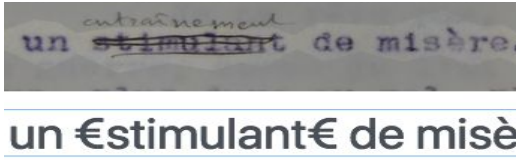


Example of an image annotated for Segmonto

SegmOnto: https://github.com/SegmOnto

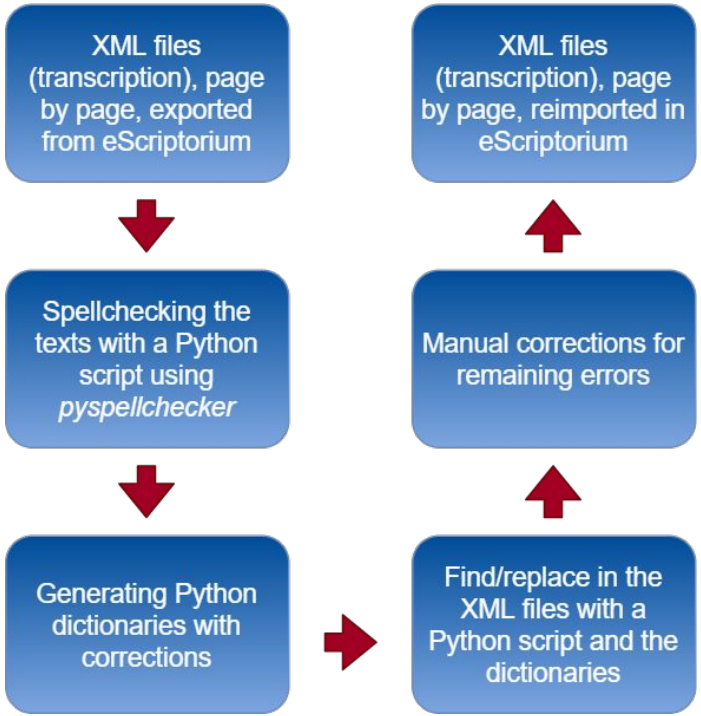
THE PIPELINE STEP BY STEP: TRANSCRIPTION

- Training of a transcription model
  - Ground truth for the first model: 84 pages (10 letters) → not efficient enough
  - Construction of a dataset more representative: focus on specific parts of text (capital letters, numbers, narrow text) - about 100 of additional pages → 92,74% accuracy
  - Fine-tuning a pre-existing model (“tapuscorpus”, trained on varied typewritten docs): resulting model potentially more capable of generalization → 93,90% accuracy
- A model capable to render meaningful formatting of the text:
  - Handwritten annotation → no recognition required, a double ‘££’ for every handwritten word
  - Deletions → a ‘€’ at the start of the deletion and at the end, even if when spanning over several words



THE PIPELINE STEP BY STEP: POST-PROCESS CORRECTIONS

- Export/import with eScriptorium
- Spell-checking:
  - Python script and *pyspellchecker* module
  - Generation of Python dictionaries for correction
- Correction of texts
  - Python script and find/replace
  - Manual correction of remaining errors
- Goal → implementation of this method in the eScriptorium API



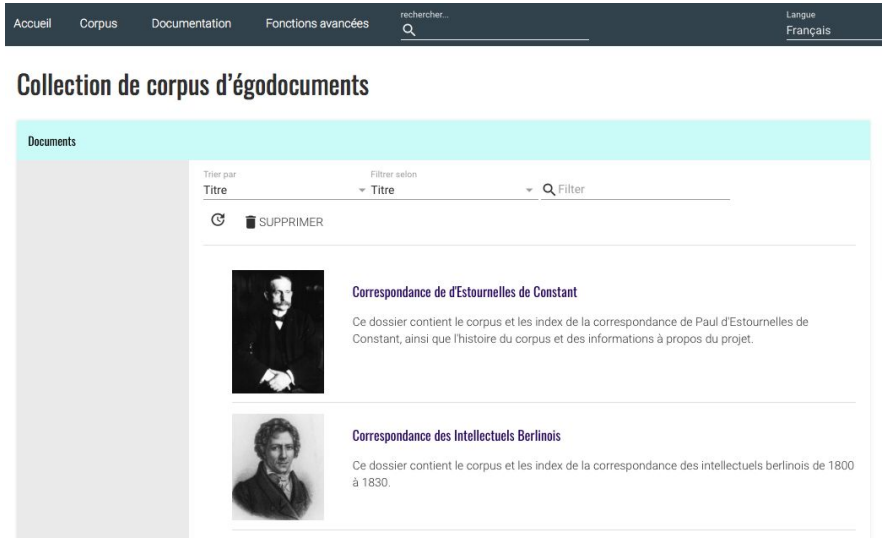
THE PIPELINE STEP BY STEP: ENCODING

- Header
  - General encoding of the header, with manuscript description for the corpus
  - Correspondence data in the <profileDesc>
- Body
  - Default text structure (titles, paragraphs), changes in text (addition and deletion), difficulties of the corpus (unclear, gaps) and named entities (person, place, organization)
  - Correspondence part:
    - Easy tags (opener, closer, address, signatures, etc.)
    - Assistance available for difficult tags: TEI mailing-list, *Correspondence* Special Interest Group
- Helping tools for the encoding
  - Script for the encoding of metadata in the header, using an inventory with essential information
  - Script for the encoding of the body, using regular expressions

Correspondence SIG: https://tei-c.org/Activities/SIG/Correspondence/

THE PIPELINE STEP BY STEP: PUBLICATION

- TEI Publisher
  - From exist-db, an open source software project for databases built on XML technology
  - Transformation files (ODD) and templates (HTML)
  - Presentation by collections
- Application for ego documents
  - Text and image opposed
  - Metadata available with a specific button
  - ODD containing all the tags related to ego documents
  - One corpus = one collection



FAVORING THE USE OF THE PIPELINE: DOCUMENTATION

- Initial documentation provided with the software, standards and framework
- Self-produced documentation
  - Comprehensive series of guidelines for the encoding of ego documents (ODD)
  - Jupyter notebooks and markdown files commenting the use of Python scripts (encoding and correction)
  - Provision of the data from the steps of the pipeline on the dedicated repository

GENERALIZATION AND MODULARITY

- Corpus of the Berlin intellectuals, correspondence of the start of the 19th century
  - Modularity: Plug data in without following the pipeline from the beginning
  - Generalization: No limit of space and time for the encoding and publication
- Sustainability
  - Dissemination of the data in useful formats
  - Ground truth available in HTR-United

NACHWUCHSGRUPPE
BERLINER INTELLEKTUELLE 1800–1830

HTR-United: https://htr-united.github.io/

Berlin Intellectuals: https://www.berliner-intellektuelle.eu/

TO CONCLUDE: KEY TAKEAWAYS

- Scenario fully documented and based on open-source and standards to avoid blackbox and/or scattered toolbox
- Adaptability of the input and output formats of softwares
- Prerequisites to use the pipeline:
  - Digitized images
  - A transcription system such as eScriptorium/Kraken
  - A TEI modelisation of the structure of your documents
  - A server to deploy a TEI Publisher application

THANK YOU FOR YOUR ATTENTION

CONTACTS

alix.chague@inria.fr

floriane.chiffoleau@inria.fr

LINKS

Repository of the project: https://github.com/FloChiff/DAHNProject

eScriptorium: http://traces6.paris.inria.fr/